

BONE FIXATION SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] The present application is a divisional of U.S. Application No. 09/978,002, filed October 17, 2001, ^{PAT 6,835,197}

FIELD OF THE INVENTION

- 5 [002] The present invention relates generally to a system for fixation of two or more parts of a fractured bone. More specifically, the present invention relates to a bone implant and locking apparatus for internal fixation of a long bone, such as a femur.

BACKGROUND OF THE INVENTION

- 10 [003] Fractures commonly occur in the femur, and especially in the femoral neck and intertrochanteric regions. Traditionally, these fractures have been treated using a nail located in the femoral head in cooperation with a side plate located on the outside of the femur, or in cooperation with an intramedullary nail located in the intramedullary canal. The nail cooperates with the side plate or intramedullary nail to align and compress the bone fragments.

- 15 [004] A high incidence of death is associated with hip fractures due to the injury itself or related complications. Frequent complications may arise when two or more bone fragments are forced towards each other when the patient supports his or her weight on the healing bone. For example, a sharp implanted nail or hip screw may cut through and penetrate the femoral head or neck; or a nail, hip screw, side plate, or intramedullary nail
20 may bend or break under load where the contact between bone fragments is insufficient for the bone itself to carry the patient's weight.

- [005] A variety of compressible fixation systems have been developed to maximize bone to bone contact while permitting bone fragments to migrate towards one another. For example, helical blades have been developed that may be inserted into and secured to the
25 neck of a femur, and coupling mechanisms have been developed to slidably couple the helical blade to a side plate or intramedullary nail.

- [006] The prior art blades, however, may be susceptible to migration within the bone fragment and, even worse, may break free or pull out of the bone fragments, thus allowing the bone fragments to separate and/or become misaligned. Prior art blades are also